**Monty’s Hall puzzle explained by Baye’s Conditional probability**

The initial probability of the car to be under any of the 3 doors is **1/3**.

Monty will never open a door with the car. So, if participant choses doorA:

1. P(openB/carDoorA) = **½**

If car is in doorA he can only open doorB or doorC.

So given the probability that participant choose doorA and car is in doorA, opening doorB is half the probability between doorB and doorC.

1. P(openB/carDoorB) = **0**

Monty will never open the door with the car.

1. P(openB/carDoorC) = **1**

If participant choose doorA and car is in doorC Monty has no choice but to open doorB.

That was the probability of the doors being open by Monty based on where the car is.

Now, the probability of the car being in doorA or doorC after he opens doorB.

1. P(carDoorA/openB) = P(openB/carDoorA) \* P(carDoorA)/P(openB) = (½ \* 1/3) / ½ = 1/3
2. P(carDoorC/openB) = P(openB/carDoorC) \* P(carDoorC)/P(openB) = (1 \* 1/3) / ½ = 2/3